612

ENGELMANN SPRUCE BEETLE CONDITIONS
UINTA, ASHLEY, WASATCH NATIONAL FORESTS
APPRAISAL SURVEY
July 1958

By
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In the past three years a buildup of Engelmann spruce beetle, Dendroctonus engelmanni, Hopk., has been progressing on the Uinta, Ashley, and Wasatch National Forests. The majority of the infestation is centered in the high country of the Uinta National Forest. Population increases presumably started in light, widely scattered windfall and possibly slash from logging operations. There is evidence that standing trees were not attacked to any extent until the fall of 1957. A buildup of this type is not spectacular and usually goes undetected until standing trees, which are more readily observed, are infested.

On the morning of June 30, 1958, a detection report of Engelmann spruce beetle activity was received through Timber Management, Regional Office, Ogden, Utah. The report originated at the Supervisor's office, Uinta National Forest, and concerned the Wolf Creek, Soapstone, and South Fork of the Provo River drainages.

Plans were made immediately for an aerial inspection of the suspected sites of infestation and in the afternoon of June 30 the area was flown by Richard I. Washburn, Forest Insect Research, Paul Grossenbach, Timber Management, R-4, and T. A. Poulson, Staff Assistant, Uinta National Forest. Aerial inspection confirmed initial reports of bark beetle activity and a considerable area of probable infestation was delineated on the flight map.

On July 2, 1958, a ground inspection of the Wolf Creek and the Dry Hollow Ridge area was made by R. I. Washburn, Jerry A. E. Knopf, Paul Grossenbach, and Supervisor Clarence Thornock, Uinta National Forest. The purpose of this trip was to locate several of the areas that had been observed from the air, to make preliminary evaluation as to the condition of the infestation, and to formulate action plans for a more complete appraisal of the situation.

Survey Method

Engelmann spruce stands in the infested area occur as islands or patches of high quality sawtimber interspersed with grazing lands. This situation, coupled with the time element of a "crash" program, virtually ruled out a systematic-percentage type survey. Areas of highest priorities, as designated by forest personnel, were considered first and given more intensive coverage.

The survey technique used may be outlined as follows:

1. A general aerial inspection was undertaken to determine the extent of the infested area. All flights of this nature were conducted in fixed wing aircraft.

2. Helicopter flights were made over the infested area and all groups of faded trees counted and marked on aerial photographs.

3. A survey team of three men was oriented as to group locations and landed by helicopter to sample the infestation.

   A 100 percent cruise was made in some instances where the timber occurred in small enough blocks for one man to handle. Surveys of this type provided forest personnel with sufficient data to enable them to decide where logging control measures would be of most value.

4. Helicopter reconnaissance surveys were also made in the West Fork of the Duchesne River and other adjoining areas containing spruce timber. Several questionable areas were marked on aerial photos and later checked by ground parties.

Results

Two high priority areas of spruce were given immediate attention so that logging operations could be initiated promptly. Results of the accelerated surveys produced an estimate of 3700 attacked trees in the Cold Springs area and a total of 350 heavily hit trees on one small patch of spruce on Soapstone Creek. Forest personnel supplied with these survey data were able to contact logging operators and issue sale contracts. Cutting operations of the infested timber was started the following day, July 10. The survey conducted July 7 through 11 covered approximately 160 square miles. Within this area it was determined that the present infestation covers about 45 square miles and contains over 20,000 trees currently infested. The spruce timber in the infested area is primarily of larger diameter classes, over 20 in. d.b.h., and of 5 or more logs in height.

Several groups of faded trees were randomly selected and preliminary brood analyses made by taking 4- x 4-inch bark samples. These samples pointed up the following conditions:

1. Most overwintering adults have emerged and are in the process of making new attacks.

2. Forty percent of the infested trees containing brood were new attacks, while 60 percent of the trees had been attacked in 1957. Newly attacked trees had a relatively high level of egg deposition.

3. Trees attacked in 1957 were noted as having half-grown to mature larvae; pupae, and callow adults. At present the ratio is about three trees containing larvae to every tree with pupae and callow adults.

   Throughout the old attacks there is considerable overlap of growth stages which probably indicates both one- and two-year life cycles as being present in the beetle population.

4. A conspicuous lack of parasites and predators was noted throughout the infestation.

5. Woodpecker activity in some small areas was classified as moderate to heavy with the existing population of woodpeckers showing a decided preference for certain trees. For the total infested area, however, woodpecker activity was considered to be light.

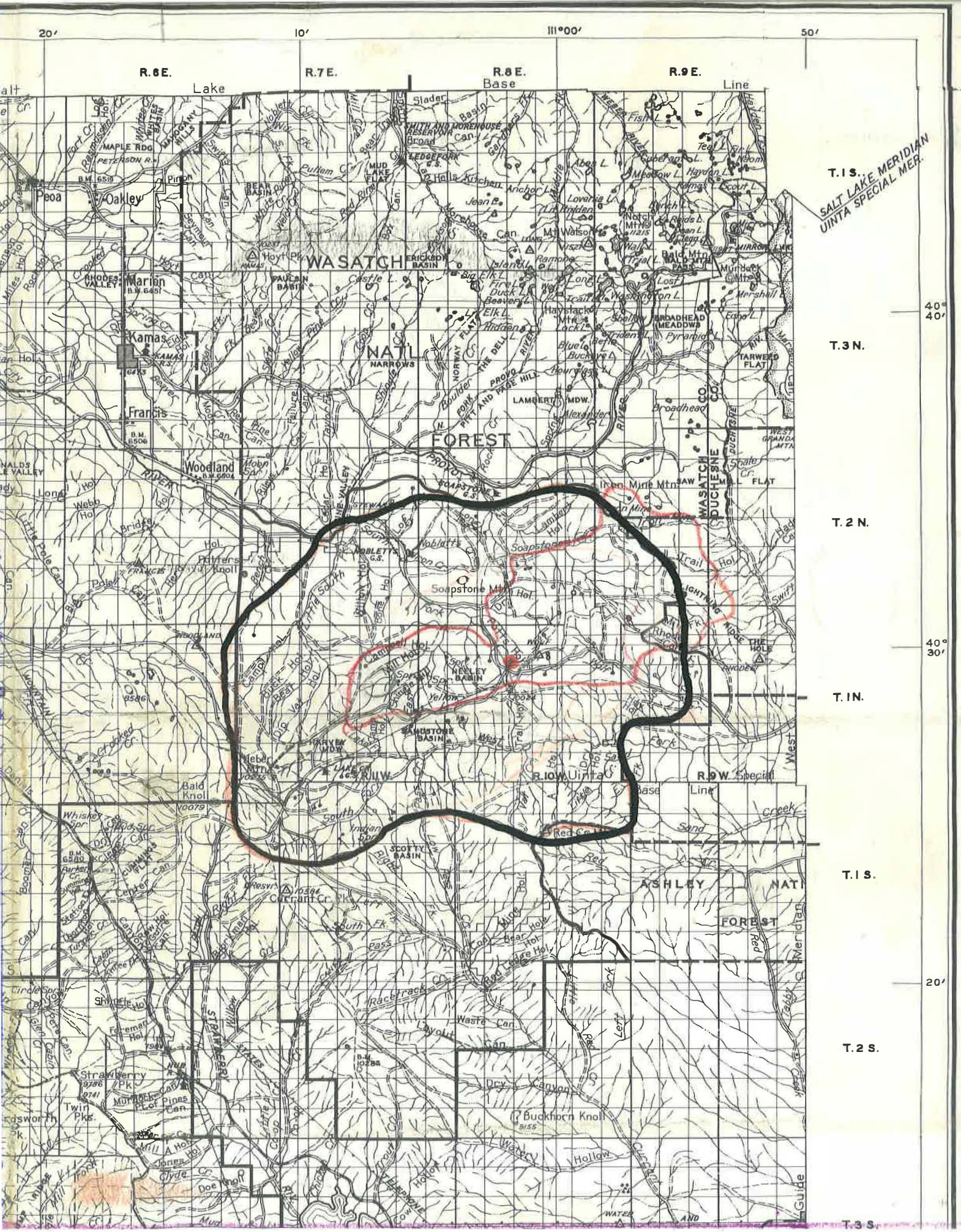
One area on the west fork of the Duchesne was located and a ground check disclosed an old bark beetle infestation containing between 300 and 400 trees that had been killed in recent years. Predators and parasites have apparently reduced this isolated infestation and at present this area does not appear as threatening.

Discussion and Recommendations

Additional flights of Engelmann spruce beetle will occur in the 1958 season and for this reason a more refined survey was not undertaken in preliminary phases of the present program. Limited surveys were conducted and a working estimate of over 20,000 infested trees was determined. It should be noted that before any action program, other than logging, could be undertaken, a more refined survey will probably be necessary.

Effective control of the Engelmann spruce beetle can be brought about by removal of infested material through logging or by the direct application of toxic chemicals such as ethylene dibromide, or by a combination of logging and treating.

Present Engelmann spruce beetle populations in the infested area are at an epidemic level and show definite tendencies to increase rapidly. Therefore, unless control measures on a total area basis are effected, additional losses at an accelerated rate can be expected. Since the infestation is well distributed throughout the islands or patches of timber, the most successful approach would be one that covered the entire area in the shortest period of time.


20'
10'
111°00'
50'
R.6E.
R.7E.
R.8E.
R.9E.
Salt Lake Base Line
SALT LAKE MERIDIAN
UINTA SPECIAL MER.
T.1S.
T.3N.
T.2N.
T.1N.
T.1S.
T.2S.
T.3S.
40° 40'
40° 30'
20'
R.10W.
R.11W.
R.9W. Special
Uinta Base Line
WASATCH
NAT'L FOREST
ASHLEY NAT'L FOREST
Peoa
Oakley
Marion
Kamas
Francis
Woodland
Hoyt Pk.
Iron Mine Mtn.
Soapstone Mtn.
Hebers Knoll
Bald Knoll
Strawberry Pk.
Twin Pks.
Buckhorn Knoll
Bald Mtn.
Haystack Mtn.
Broadhead Meadows
Tarweed Flat
Lambert Mdw.
Mud Lake Flat
Bear Basin
Rhodes Valley
Paul's Basin
Erickson Basin
Smith and Morehouse Reservoir
Ledgefork G.S.
Soapstone G.S.
Hobletts G.S.
Lake Fk. G.S.
Provo River
Weber River
Duchesne Co.
Wasatch Co.
Maple Rdg.
Peterson R.
Mahogany Hills
Rhodes Valley
Webb Hol.
Bridge Hol.
Hobletts
Soapstone Basin
Keeley Basin
Mt. Hol.
Lightning Ridge
The Hole
Harvey Mdw.
Lakefork Basin
Scotty Basin
Whisker Spr.
Indian Spr.
Red Canyon
Sand Creek
Dry Canyon
Watercress Hollow
Guide
Water
Trail
Layout
Racetrack
Foreman Hol.
Shingle Hol.
Jones Hol.
Clyde Cr.
Doe Hol.
Mud Hol.
Trout Hol.
Telephone Cut Off
Strawberry Aqueduct
Murdock Flat
Lot Pines Can.
Circle Spr.
Deadworth Pk.
Bear Hol.
Ridge Hol.
Cow Hol.
Waste Can.
Red Ledge Hol.
Red Fork
Left Fork
Dry Fork
Sand Fork
West Fork
South Fk.
Yellow Pine Can.
Pine Can.
Cedar Can.
Beaver Cr.
Crooked Cr.
Spring Cr.
Rock Cr.
Shingle Cr.
Webb Hol.
Bridge Hol.
Hobletts
Soapstone Basin
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Mt. Hol.
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